UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/656,696 | 09/04/2003 | Woong-Kyu Min | YOM-0054 | 8570 |

7590 11/08/2006

Cantor Colburn LLP
55 Griffin Road South
Bloomfield, CT 06002

| EXAMINER | |
|---|---|
| MOON, SEOKYUN | |
| ART UNIT | PAPER NUMBER |
| 2629 | |

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/656,696 | MIN ET AL. | |
| | Examiner | Art Unit | |
| | Seokyun Moon | 2629 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *6-12 and 18-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 2* is/are rejected.

7)☒ Claim(s) *3-5 and 13-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

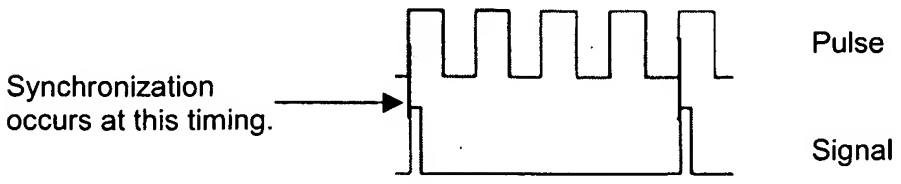
### *Response to Arguments*

1. The Applicants' arguments with respect to the rejection of claim 1, filed on September 14, 2006, have been fully considered but they are not persuasive.

In the arguments, the Applicants pointed out that "*The modulation pulse generated by the generators (16) or (18) merely synchronize with the vertical synchronizing signal, but form no basis for selection of the modulation pulse generated by the selector (20)*" [pg 8 lines 22-24] with respect to the secondary reference, Funamoto (US 2003/0142118), that the Examiner submitted in order to meet the claim limitation, "*controlling the on-time of the lamp driving signal in response to at least one of a vertical synchronization signal and a vertical synchronization start signal*" disclosed in claim 1.

The Examiner respectfully disagrees.

As disclosed in Funamoto [par. (0148) lines 5-11], each of the 60 Hz PWM modulation pulse and the 240 Hz PWM modulation pulse are synchronized with the vertical synchronization signal. Synchronizing the pulses with the signal indicates that the timings of starting and/or ending on-time and/or off-time of the pulses are determined according to the timings of starting and/or ending on-time and/or off-time of the signal. Please refer to the drawing provided below for an illustration of synchronization.




Drawing 1

Since the timings of starting and/or ending on-time and/or off-time of the modulation pulse ("*carrier signal*" in the claim) determines the timings of starting and/or ending on-time and/or off-time of the outputted modulated pulse ("*lamp driving signal*" in the claim) in Wei modified by Funamoto, the timings of starting and/or ending on-time and/or off-time of the modulated pulse are determined by the timings of starting and/or ending on-time and/or off-time of the vertical synchronization signal. Furthermore, the Examiner respectfully submits that there is nothing in the claim precluding the Examiner to interpret the claim limitation, "*controlling the on-time of the lamp driving signal*" as "*controlling the timings of starting/ending on-time of the lamp driving signal*".

In response to the Applicants' arguments against the references individually [pg. 8 lines 25-30], one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In view of the foregoing, the Examiner respectfully submits that the Applicants' arguments with respect to the rejection of claim 1 are not persuasive.

2. Currently, all the claim rejections disclosed in the Office Action mailed on June 15, 2006 are maintained. For the Applicants' convenience, all the claim rejections made in the previous Office Action are included in this correspondence.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject

matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. (U.S. Pub. No. 2003/0137485 A1, herein after referred to as "Wei") in view of Funamoto et al. (U.S. Pub. No. 2003/0142118 A1, herein after referred to as "Funamoto").

Wei [fig. 3] teaches an inverter ("*light source modulator 42*") for a liquid crystal display, the inverter comprising:

an inverter controller ("*pulse width modulation controller 58*") generating a lamp driving signal ("*PWM signal 59*") having on-time and off-time, by pulse width modulating a dimming signal ("*feedback signal 56*") [par (0023) lines 13-19 and fig. 3, wherein the feedback signal 56 is inputted into the pulse width modulation controller 58, and thus a modulated signal, PWM signal 59 is outputted from the controller and inputted into the transistor Q4].

a power switching element ("*transistor Q4*") selectively transmitting a DC voltage ("VM'") in response to a signal from the inverter controller [par. (0023) lines 19-22]; and

a voltage booster ("*transformer T2*") for driving a lamp ("*back light source 38*") in response to a signal from the switching element [par. (0023) lines 19-25].

Wei does not expressly disclose the inverter controller to generate a carrier signal for pulse width modulation and to control the on-time of the lamp driving signal in response to at least one of a vertical synchronization signal and a vertical synchronization start signal.

However, Funamoto [fig. 3] teaches a mean ("*PWM modulation pulse generating circuit 4*") generating a carrier signal ("*modulation pulse*") for pulse width modulation and controlling the on-time of the modulation (by synchronizing with the vertical synchronizing signal) pulse in response to a vertical synchronization signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include Funamoto's PWM modulation pulse generating circuit in Wei's inverter controller, to allow the Wei to select one of the signals having different modulation frequencies according to the motion detection result, to thereby enable reduction of image contour blurring in a moving image and reduction of flicker in a still image [abstract lines 7-10].

5. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei and Funamoto as applied to claim 1 above, and further in view of Lee et al. (U.S. Pub. No. 2002/0057247 A1, herein after referred to as "Lee").

Wei as modified by Funamoto inherently teaches a mean for providing the vertical synchronization signal since the modified Wei discloses that a vertical sync signal is fed into the inverter controller [Funamoto: fig. 3], and thus is required to have a mean generating the vertical sync signal.

Wei [fig. 3] teaches that the dimming signal ("*feedback signal 56*") being provided from an external device ("*feedback circuit 36*").

Wei does not disclose the vertical synchronization start signal being provided by the signal controller.

However, Lee [fig. 3] discloses a timing controller ("*timing controller 100*") providing a vertical synchronization start signal [par. (0121)].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wei to provide a vertical synchronization signal, as taught by Lee, to allow Wei's display device to adjust and optimize the timing of driving gate scanning lines and thus to prevent flicker or image degradation of the display.

***Allowable Subject Matter***

6. **Claims 3, 4, 5, 13, 14, 15, 16,** and **17** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 3, 2006
S.M.

AMR A. AWAD
SUPERVISORY PATENT EXAMINER